

AMENDMENT 44 TO THE FISHERY MANAGEMENT PLAN FOR THE  
GROUND FISH FISHERY OF THE BERING SEA AND ALEUTIAN ISLANDS AREA

In section 4.3, Part 1, Operational Definition of Terms, item (d) - Threshold is removed; items (e) - Overfishing and (f) - Optimum yield are redesignated as items (d) and (e), respectively; and the existing definitions for "Acceptable biological catch" and "Overfishing" are replaced with the following:

Acceptable biological catch (ABC) is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or stock complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery. The fishing mortality rate used to calculate ABC is capped as described under "overfishing" below.

Overfishing is defined as any amount of fishing in excess of a prescribed maximum allowable rate. This maximum allowable rate is prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. The SSC will have final authority for determining whether a given item of information is "reliable" for the purpose of this definition and may use either objective or subjective criteria in making such determinations. For tier (1), a "pdf" refers to a probability density function. For tiers (1)-(3), the coefficient  $\alpha$  is set at a default value of 0.05, with the understanding that the SSC may establish a different value for a specific stock or stock complex as merited by the best available scientific information. For tiers (2)-(4), a designation of the form " $F_{x\%}$ " refers to the  $F$  associated with an equilibrium level of spawning per recruit (SPR) equal to  $X\%$  of the equilibrium level of spawning per recruit in the absence of any fishing. If reliable information sufficient to characterize the entire maturity schedule of a species is not available, the SSC may choose to view SPR calculations based on a knife-edge maturity assumption as reliable. For tier (3), the term  $B_{40\%}$  refers to the long-term average biomass that would be expected under average recruitment, and  $F = F_{40\%}$ .

- Tier (1) *Information available: Reliable point estimates of  $B$  and  $B_{msy}$  and reliable pdf of  $F_{msy}$ .*
- 1a) *Stock status:  $B/B_{msy} > 1$*   
 $F_{OFL} = \mu_A$ , the arithmetic mean of the pdf.  
 $F_{ABC} = \mu_H$ , the harmonic mean of the pdf.
- 1b) *Stock status:  $\alpha < B/B_{MSY} \leq 1$*   
 $F_{OFL} = \mu_A \times (B/B_{MSY} - \alpha) / (1 - \alpha)$   
 $F_{ABC} = \mu_H \times (B/B_{MSY} - \alpha) / (1 - \alpha)$
- 1c) *Stock status:  $B/B_{MSY} \leq \alpha$*   
 $F_{OFL} = 0$   
 $F_{ABC} = 0$
- (2) *Information available: Reliable point estimates of  $B$ ,  $B_{MSY}$ ,  $F_{MSY}$ ,  $F_{30\%}$ , and  $F_{40\%}$ .*
- 2a) *Stock status:  $B/B_{MSY} > 1$*   
 $F_{OFL} = F_{MSY} \times (F_{30\%} / F_{40\%})$   
 $F_{ABC} \leq F_{MSY}$
- 2b) *Stock status:  $\alpha < B/B_{MSY} \leq 1$*   
 $F_{OFL} = F_{MSY} \times (F_{30\%} / F_{40\%}) \times (B/B_{MSY} - \alpha) / (1 - \alpha)$

$$F_{ABC} \leq F_{MSY} \times (B/B_{MSY} - \alpha) / (1 - \alpha)$$

2c) *Stock status:*  $B/B_{MSY} \leq \alpha$   
 $F_{OFL} = 0$   
 $F_{ABC} = 0$

(3) *Information available: Reliable point estimates of B, B<sub>40%</sub>, F<sub>30%</sub>, and F<sub>40%</sub>.*

3a) *Stock status:*  $B/B_{40\%} > 1$

$$F_{OFL} = F_{30\%}$$

$$F_{ABC} \leq F_{40\%}$$

3b) *Stock status:*  $\alpha < B/B_{40\%} \leq 1$

$$F_{OFL} = F_{30\%} \times (B/B_{40\%} - \alpha) / (1 - \alpha)$$

$$F_{ABC} \leq F_{40\%} \times (B/B_{40\%} - \alpha) / (1 - \alpha)$$

3c) *Stock status:*  $B/B_{40\%} \leq \alpha$

$$F_{OFL} = 0$$

$$F_{ABC} = 0$$

(4) *Information available: Reliable point estimates of B, F<sub>30%</sub>, and F<sub>40%</sub>.*

$$F_{OFL} = F_{30\%}$$

$$F_{ABC} \leq F_{40\%}$$

(5) *Information available: Reliable point estimates of B and natural mortality rate M.*

$$F_{OFL} = M$$

$$F_{ABC} \leq 0.75 \times M$$

(6) *Information available: Reliable catch history from 1978 through 1995.*

*OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information.*

$$ABC = 0.75 \times OFL$$

AMENDMENT 44 TO THE FISHERY MANAGEMENT PLAN FOR  
GROUND FISH OF THE GULF OF ALASKA

In section 2.2, Operational Definition of Terms, the definition of "Threshold" is removed, and the existing definitions for "Acceptable biological catch" and "Overfishing" are replaced with the following:

Acceptable biological catch (ABC) is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or stock complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery. The fishing mortality rate used to calculate ABC is capped as described under "overfishing" below.

Overfishing is defined as any amount of fishing in excess of a prescribed maximum allowable rate. This maximum allowable rate is prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. The SSC will have final authority for determining whether a given item of information is "reliable" for the purpose of this definition and may use either objective or subjective criteria in making such determinations. For tier (1), a "pdf" refers to a probability density function. For tiers (1)-(3), the coefficient  $\alpha$  is set at a default value of 0.05, with the understanding that the SSC may establish a different value for a specific stock or stock complex as merited by the best available scientific information. For tiers (2)-(4), a designation of the form " $F_{x\%}$ " refers to the  $F$  associated with an equilibrium level of spawning per recruit (SPR) equal to  $X\%$  of the equilibrium level of spawning per recruit in the absence of any fishing. If reliable information sufficient to characterize the entire maturity schedule of a species is not available, the SSC may choose to view SPR calculations based on a knife-edge maturity assumption as reliable. For tier (3), the term  $B_{40\%}$  refers to the long-term average biomass that would be expected under average recruitment, and  $F = F_{40\%}$ .

- Tier (1) *Information available: Reliable point estimates of  $B$  and  $B_{msy}$  and reliable pdf of  $F_{msy}$ .*
- 1a) *Stock status:  $B/B_{msy} > 1$*   
 $F_{OFL} = \mu_A$ , the arithmetic mean of the pdf.  
 $F_{ABC} = \mu_H$ , the harmonic mean of the pdf.
- 1b) *Stock status:  $\alpha < B/B_{MSY} \leq 1$*   
 $F_{OFL} = \mu_A \times (B/B_{MSY} - \alpha) / (1 - \alpha)$   
 $F_{ABC} = \mu_H \times (B/B_{MSY} - \alpha) / (1 - \alpha)$
- 1c) *Stock status:  $B/B_{MSY} \leq \alpha$*   
 $F_{OFL} = 0$   
 $F_{ABC} = 0$
- (2) *Information available: Reliable point estimates of  $B$ ,  $B_{MSY}$ ,  $F_{MSY}$ ,  $F_{30\%}$ , and  $F_{40\%}$ .*
- 2a) *Stock status:  $B/B_{MSY} > 1$*   
 $F_{OFL} = F_{MSY} \times (F_{30\%} / F_{40\%})$   
 $F_{ABC} \leq F_{MSY}$
- 2b) *Stock status:  $\alpha < B/B_{MSY} \leq 1$*   
 $F_{OFL} = F_{MSY} \times (F_{30\%} / F_{40\%}) \times (B/B_{MSY} - \alpha) / (1 - \alpha)$   
 $F_{ABC} \leq F_{MSY} \times (B/B_{MSY} - \alpha) / (1 - \alpha)$

2c) *Stock status:  $B/B_{MSY} \leq \alpha$*   
 $F_{OFL} = 0$   
 $F_{ABC} = 0$

(3) *Information available: Reliable point estimates of  $B$ ,  $B_{40\%}$ ,  $F_{30\%}$ , and  $F_{40\%}$ .*

3a) *Stock status:  $B/B_{40\%} > 1$*   
 $F_{OFL} = F_{30\%}$   
 $F_{ABC} \leq F_{40\%}$

3b) *Stock status:  $\alpha < B/B_{40\%} \leq 1$*   
 $F_{OFL} = F_{30\%} \times (B/B_{40\%} - \alpha) / (1 - \alpha)$   
 $F_{ABC} \leq F_{40\%} \times (B/B_{40\%} - \alpha) / (1 - \alpha)$

3c) *Stock status:  $B/B_{40\%} \leq \alpha$*   
 $F_{OFL} = 0$   
 $F_{ABC} = 0$

(4) *Information available: Reliable point estimates of  $B$ ,  $F_{30\%}$ , and  $F_{40\%}$ .*

$$F_{OFL} = F_{30\%}$$

$$F_{ABC} \leq F_{40\%}$$

(5) *Information available: Reliable point estimates of  $B$  and natural mortality rate  $M$ .*

$$F_{OFL} = M$$

$$F_{ABC} \leq 0.75 \times M$$

(6) *Information available: Reliable catch history from 1978 through 1995.*

*OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information.*

$$ABC = 0.75 \times OFL$$